Gerardo Chowell

Director's Postdoctoral Fellow

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Birth date: 12/1978

EDUCATION

Ph. D. in Biometry
Biological Statistics and Computational Biology, Cornell University,
Ithaca, New York 14853
Conferral: January 19, 2005.

Engineering in Telematics
College of Telematics, Universidad de Colima, Mexico
August 1997 - June 2001

International Programs:

Exchange student at the British Columbia Institute of Technology
British Columbia, Canada
Fall of 1998

The Spanish Agency of International Cooperation: Intercampus Program
Universidad de Cadiz, Spain
February-March, 2001

HONORS

Director's Funded Postdoctoral Fellowship (2005-2006)
Los Alamos National Laboratory, Los Alamos, New Mexico.

National Prize for Youth 2002 (Premio Nacional de la Juventud 2002) for academic merits
Instituto Mexicano de la Juventud, Government of Mexico, DF, November 24, 2003. Award includes Diploma signed by Mexican President Vicente Fox, Gold Medal, and 110,000 Mexican pesos (more than $9,800 dollars)
(see addendum)

National Prize for Youth 2000 (honorific mention for academic merits)
Instituto Mexicano de la Juventud, Government of Mexico, Mexico, DF, January 2002

State Prize for Youth 2000 (Premio Estatal de la Juventud 2000) for academic merits
Instituto Mexicano de la Juventud, Colima, Mexico, December 2001

"Premio Peña Colorada" AWARD for academic merits
Consorcio Minero Benito Juarez, Colima, Col. Mexico, December 2001

"Arq. Rodolfo Chavez Carrillo" AWARD for academic merits
Bachillerato Tecnico No.1, Universidad de Colima, Mexico, November 1997
Award includes Diploma and Gold Medal.

TELMEX Scholarship, TELMEX Foundation, September 1999 June 2001

Academic Excellence Recognition, Universidad de Colima, 1997-2000

Creativity Contest, 3rd place, College of Telematics, Universidad de Colima, 1998

National Contest of Informatics (Mexico), 4th place, Instituto Tecnologico Autonomo de Mexico, July 1997.

Science Contests at the Universidad de Colima, Mexico:
- ***Differential Calculus state contest,*** 1st place, May 1997
- ***Analytic Geometry state contest,*** 1st place, December 1996
- ***Trigonometry state contest,*** 2nd place, June 1996
- ***Organic Chemistry state contest,*** 2nd place, December 1996
- ***Inorganic Chemistry state contest,*** 1st place, June 1996

RESEARCH INTERESTS

Mathematical modeling of the spread of emerging and re-emerging infectious diseases, model validation, social networks, statistical methods in medicine, statistical applications to epidemiology, and agent-based modeling.

Publications

G. Chowell , C. E. Ammon, N. W. Hengartner, J. M. Hyman. Estimation of the reproductive number of the Spanish Flu epidemic in Geneva, Switzerland. Proceedings of the Second European Influenza Conference. *Vaccine* (In press).

G. Chowell, P. Diaz-Duenas, R. Bustos-Saldana, A. Aleman-Mireles, and V. Fet. Epidemiological and Clinical Characteristics of Scorpionism in Colima, Mexico (2000-2001). Toxicon (in press).

G. Chowell, A. Cintron-Arias, S. Del Valle, F. Sanchez, B. Song, J. M. Hyman, H. W. Hethcote, C. Castillo-Chavez. Mathematical applications associated with the deliberate release of infectious agents. *Modeling The Dynamics of Human Diseases: Emerging Paradigms and Challenges. AMS Cotemporary Mathematics Series (to appear)*. Gumel A. (Chief Editor), Castillo-Chavez, C., Clemence, D.P. and R.E. Mickens.

G. Chowell , C. E. Ammon, N. W. Hengartner, J. M. Hyman. Transmission dynamics of the great influenza pandemic of 1918 in Geneva, Switzerland: Assessing the effects of hypothetical interventions. *J. Theor. Biol*. (In press).

A. L. Rivas, B. Kunsberg, **G. Chowell**, S. D. Smith, J. M. Hyman, S. J. Schwager. Human-mediated foot-and-mouth disease epidemic dispersal: disease and vector clusters. *J. Vet. Med.* B 52, 1-10 (2005).

G. Chowell, A. L. Rivas, N. W. Hengartner, J. M. Hyman, C. Castillo-Chavez. Critical response to post-outbreak vaccination against foot-and-mouth disease. *Modeling The Dynamics of Human Diseases: Emerging Paradigms and Challenges. AMS Cotemporary Mathematics Series (to appear).* Gumel A. (Chief Editor), Castillo-Chavez, C., Clemence, D.P. and R.E. Mickens.

G. Chowell, J. M. Hyman, P. Diaz-Duenas, N. W. Hengartner. Predicting scorpion sting incidence in an endemic region using climatological variables. *Int. J. Env. Health Res*. 15(6), 425-435 (2005).

G. Chowell, P. Diaz-Duenas, and D. Chowell. The dynamics of pulmonary tuberculosis in Colima, Mexico (1999-2002). *Scand. J. Infect. Dis*. 37(11), 858-862 (2005).

J. Gjorgjieva, K. Smith, **G. Chowell** , F. Sanchez, J. Snyder, and C. Castillo-Chavez. The role of vaccination in the control of SARS. *Math. Biosci. Eng.* 2(4), 753-769 (2005)

G. Chowell, A. L. Rivas, S. D. Smith, J. M. Hyman. Identification of case clusters and counties of greater infective connectivity in the 2001 Uruguayan foot-and-mouth disease epidemic. *Am. J. Vet. Res*. 67(1), 1-12 (2006).

G. Chowell, E. Shim, F. Brauer, P. Diaz-Duenas, J. M. Hyman, C. Castillo-Chavez. Modeling the

transmission dynamics of Acute Hemorrhagic Conjunctivitis: Application to the 2003 outbreak in Mexico. *Stat. Med. (in press)* published online Sep 12, 2005. DOI: 10.1002/sim.2352.

G. Chowell, A. L. Rivas, N. W. Hengartner, J. M. Hyman, C. Castillo-Chavez. The role of spatial mixing in the spread of foot-and-mouth disease. *Prev. Vet. Med*. (in press).

G. Chowell, C. Castillo-Chavez, P. Diaz-Duenas. Characterization of an outbreak of Acute Hemorrhagic Conjunctivitis. *Digital J. Ophtalm.* 11/1 (2005).

P. Diaz-Duenas, **G. Chowell**, G. Ceja, T. C. D'Auria, R. C. Lloyd, C. Castillo-Chavez. Pediatric electrocardiograph abnormalities following *Centruroides limpidus tecomanus* scorpion envenomation. *Toxicon* 45(1), 27-31 (2005)

G. Chowell , N. W. Hengartner, C. Castillo-Chavez, P. W. Fenimore, and J. M. Hyman. The reproductive number of ebola and the effects of public health measures: The cases of Congo and Uganda. *J. Theor. Biol.* 229(1), 119-126 (2004)

G. Chowell, C. Castillo-Chavez, P.W. Fenimore, C. Kribs-Zaleta, L. Arriola, J.M. Hyman. Model parameters and outbreak control for SARS. *Emerg. Inf. Dis*. 10 (7) (2004).

G. Chowell, J. M. Hyman, S. Eubank, C. Castillo-Chavez. Scaling laws for the movement of people between locations in a large city. *Phys. Rev. E* 68 (2003).

G. Chowell and C. Castillo-Chavez. Worst-Case scenarios and epidemics. Mathematical and Modeling Approaches to Homeland Security (2003), T. Banks, C. Castillo-Chavez Eds. Frontiers in Applied Mathematics Vol. 28 (SIAM, Philadelphia, 2003).

G. Chowell, P.W. Fenimore, M.A. Castillo-Garsow, C. Castillo-Chavez. SARS outbreaks in Ontario, Hong Kong and Singapore: the role of diagnosis and isolation as a control mechanism. *J. Theor. Biol.* 24, 1-8 (2003).

PhD Thesis: Mathematical Models for Emergent and Re-Emergent Infectious Diseases: Assessing the Effects of Public Health Interventions. Cornell University, Adviser: Carlos Castillo-Chavez.

Technical reports:

Deterministic and Stochastic Reaction-diffusion Models in a Ring
Technical report for the Mathematical and Theoretical Biology Institute (MTBI), Cornell University, Ithaca, New York, Summer 2000.

Disease Dynamics on Small-world and other Networks
Technical report for the Mathematical and Theoretical Biology Institute (MTBI), Cornell University, Ithaca, New York, Summer 2001.

RESEARCH EXPERIENCE

Mathematical Modeling and Analysis
Los Alamos National Laboratory
Director's Postdoctoral Fellow
March 2005 - present

Mathematical Modeling and Analysis
Los Alamos National Laboratory
Staff Research Assistant
Los Alamos, New Mexico
August 2004 – December 2004

Mathematical and Theoretical Biology Institute
Arizona State University/Los Alamos National Laboratory
Graduate Research Assistant
Los Alamos, New Mexico
June 2004 - August 2004

Center for Nonlinear Studies (CNLS)
Los Alamos National Laboratories
Staff Research Employee
Los Alamos, New Mexico
January 2003 – January 2004

Theoretical Division (T-7 Group)
Los Alamos National Laboratory
Graduate Research Assistant
Los Alamos, New Mexico
Summer of 2002

The Spanish Agency of International Cooperation: Intercampus Program
Escuela Superior de Ingenieria, Universidad de Cadiz, Spain
February 2001- March 2001

Mathematical and Theoretical Biology Institute
Cornell University, Ithaca, New York, Summers of 2000 and 2001

STUDENT MENTORING

Summer of 2005
Benjamin Kunsberg (Mathematics department, The Johns Hopkins University): Summer 2005
Project: Human-mediated foot-and-mouth disease epidemic dispersal (published in J. Vet. Med. B, 2005)

Summer of 2004
Julijana Gjorgjieva (Mathematics department, Harvey Mudd College): Summer of 2004
Kelly Smith (Mathematics department, Clarion University of Pennsylvania)
Jessica Snyder (College of Sciences, Georgia Institute of Technology)
Project: The role of vaccination in the control of SARS (published in Math. Biosci. Eng., 2005)

REVIEWER FOR:

Journal of Theoretical Biology, Emerging Infectious Diseases, IEEE Transactions on Biomedical Engineering.

ORAL AND POSTER PRESENTATIONS

Talk: Containing the next influenza pandemic: Lessons and knowledge from past epidemics.
T-10, Biological Sciences group seminar
Los Alamos National Laboratory
Los Alamos, New Mexico
December 07, 2005.

Poster: Transmission dynamics of the great influenza pandemic of 1918 in Geneva, Switzerland: Assessing the effects of hypothetical interventions.
Second European Influenza Conference
St.-Julians, Malta
September 10-14, 2005

Discussion leader: Parameter estimation, uncertainty and sensitivity in epidemic modeling
Mathematical Epidemiology Workshop (PIMS)
Banff, Alberta, Canada
August 25, 2005

Talk: The 2001 Uruguayan Foot-and-Mouth Disease Epidemic: Modeling and Testing of Data-driven Hypothesis on Spatial Connectivity
Modeling the dynamics of human diseases: Emerging paradigms & Challenges
Snowbird Resort, Snowbird, UT
July 17, 2005

Talk: Modeling the 2001 Foot-and-Mouth Epidemic in Uruguay using Geo-referenced data
2005 SIAM Annual Meeting,
New Orleans, LA.
July 11-15, 2005

Poster: Spatial Patterns of Infection: Modeling the 2001 Foot-and-Mouth Epidemic in Uruguay using Geo-referenced data
1st Young Researchers Workshop
Mathematical Biology Institute (MBI)
Ohio State University
Columbus, Ohio
April 01, 2005

Invited talk: The Effects of Public Health Measures on the Transmission of SARS
From Cholera to Smallpox and Beyond: Mathematical Modeling for 21st Century Public Health Practice Conference
Riverside County Department of Public Health
Palm Springs, CA
March 09, 2005

Talk: Mathematics Department Seminar
Invited talk: Mathematical models for Emergent and Re-Emergent Infectious Diseases: The cases of SARS and Foot-and-Mouth Disease
Department of Mathematics and Statistics
University of New Mexico, Albuquerque, NM

October 12, 2004

Talk: Mathematical Biology Seminar
Invited talk: Transmission Dynamics of SARS and the Effects of Public Health Interventions
Department of Mathematics, Arizona State University, Arizona.
March 22, 2004

Talk: 2003 SACNAS Conference
SARS outbreaks in Ontario, Hong Kong, and Singapore: the role of diagnosis and isolation as control mechanisms
2-4 October, 2003
Albuquerque, NM

Poster: Conference on Growing Networks and Graphs in Statistical Physics, Finance, Biology and Social Systems
(Travel Grant from Graduate School at CU)
University of Rome La Sapienza
Poster Presentation (with Zoltan Torockzkai): Halting Epidemics in Proximity Networks
September 1-5, 2003
Rome, Italy

Computational and Mathematical Approaches to Homeland Security, Public Health Policy and Control: Challenges Posed by Emerging and Reemerging Diseases
Los Alamos National Laboratory
Conference Organizer
June 30 - July 3, 2003
Los Alamos, New Mexico 87544

Poster: Networks: Structure, Dynamics and Function
Center for Nonlinear Studies, Los Alamos National Laboratory
Poster presentation (with Zoltan Torockzkai): Halting Epidemics in Proximity Networks
May 12-16, 2003
Los Alamos, New Mexico.

Talk: SACNAS (Society for the Advancement of Chicanos and Native Americans in Science)
(Travel Grant from Graduate School at CU)
Oral Presentation: Network Analysis Approach to Epidemics.
Anaheim, California.
September 2002

Talk: SACNAS (Society for the Advancement of Chicanos and Native Americans in Science)
Disease Dynamics on Small-World and other Networks.
Phoenix, Arizona
September 2001

Poster: International Symposium at the UMET
Disease Dynamics on Small-World and other Networks,
San Juan, Puerto Rico

October 2001

Poster: AMS (American Mathematical Society)
(Travel Grant from Graduate School at CU)
Disease Dynamics on Small-World and other Networks
San Diego, California
January 2002

Poster: SACNAS (Society for the Advancement of Chicanos and Native Americans in Science)
Deterministic and Stochastic Reaction Diffusion models in a Ring
Atlanta, Georgia
October 2000

Poster: AMS (American Mathematical Society)
Deterministic and Stochastic Reaction Diffusion models in a Ring
New Orleans, LA
January 2001

On the Mexican National Prize for Youth

The Mexican National Prize for Youth is awarded by the Mexican Institute of Youth or Instituto Mexicano de la Juventud. Established by the Mexican legislature in 1998, the Institute of Youth is a federal agency that promotes participation by young people aged 12 to 29 in improving the social, cultural and living standards for the Mexican nation and its 34 million youth.

The prize is presented by Mexican President at the presidential residence of Los Pinos in Mexico City. The award recognizes cumulative academic activities, including research, publications, invited talks, awards and community service. The award includes a diploma, a gold medal and 110,000 Mexican pesos (more than $9,800). More information at:
http://www.sep.gob.mx/wb2/sep/sep_Premio_Nacional_de_la_Juventud

REFERENCES

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Arizona State University,
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Mail Stop B284
Los Alamos National Laboratory
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